

WHAT IS CLAIMED IS:

1. An apparatus for measuring electrical parameters of an electrical system comprising:
  - measurement circuitry configured to:
    - measure a first parameter of the electrical system between a first connection to the electrical system and a second connection to the electrical system;
    - measure a second parameter of the electrical system between a third connection to the electrical system and the second connection to the electrical system; and
  - a processor configured to determine a third electrical parameter of the electrical system as a function of the first parameter and the second parameter.
2. The apparatus of claim 1:
  - wherein the measurement circuitry is further configured to:
    - measure a fourth dynamic parameter between the third electrical connection to the electrical system and a fourth connection to the electrical system;
    - measure a fifth parameter of the electrical system between the third electrical connection and

the second electrical connection;  
and

the processor is further configured to determine a sixth parameter of the electrical system as a function of the fourth and the fifth parameters.

3. The apparatus of claim 1 wherein the first and second parameters comprise dynamic parameters.

4. The apparatus of claim 1 wherein the first and second parameters are measured in response to a forcing function.

5. The apparatus of claim 4 wherein the forcing function comprises an active forcing function.

6. The apparatus of claim 4 wherein the forcing function comprises a passive forcing function.

7. The apparatus of claim 1 including Kelvin connectors configured to couple to the electrical system.

8. The apparatus of claim 1 wherein the third electrical parameter comprises electrical resistance of a cable of the electrical system.

9. The apparatus of claim 1 wherein the electrical system comprises an electrical system of a vehicle.

10. The apparatus of claim 1 wherein the third parameter comprises electrical resistance and is determined in accordance with the equation:

$$R_1 = F[P(C, D'), P(C', D')]$$

Where C, C' and D' are points on the electrical system.

11. The apparatus of claim 10 including a forcing function applied between the C point on the electrical system and a D point on the electrical system.

12. The apparatus of claim 1 wherein the first and second parameters are indicative of a cold cranking amps (CCA) measurement.

13. The apparatus of claim 1 including an output configured to provide an output related to the third electrical parameter.

14. The apparatus of claim 13 wherein the output comprises an output to an operator.

15. The apparatus of claim 13 wherein the output comprises an output to electrical circuitry.

16. The apparatus of claim 13 wherein the output comprises a pass/fail output.

17. The apparatus of claim 13 wherein the output is indicative of a voltage drop for a particular current through the electrical system.

18. A method for measuring electrical parameters of an electrical system comprising:

measuring a first parameter of the electrical system between a first connection to the electrical system and a second connection to the electrical system;

measuring a second parameter of the electrical system between a third connection to the electrical system and the second connection to the electrical system; and

determining a third parameter of the electrical system as a function of the first parameter and the second parameter.

19. The method of claim 18 including:

measuring a fourth dynamic parameter between the third electrical connection to the electrical system and a fourth connection to the electrical system;  
measuring a fifth parameter of the electrical system between the third electrical connection and the second electrical connection; and  
determining a sixth parameter of the electrical system as a function of the fourth and the fifth parameters.

20. The method of claim 18 wherein the first and second parameters comprise dynamic parameters.

21. The method of claim 18 including applying a forcing function and wherein the first and second parameters are measured in response to the forcing function.

22. The method of claim 21 wherein the forcing function comprises an active forcing function.

23. The method of claim 21 wherein the forcing function comprises a passive forcing function.

24. The method of claim 18 including applying Kelvin connectors configured to couple to the electrical system.

25. The method of claim 18 wherein the third electrical parameter comprises electrical resistance of a cable of the electrical system.

26. The method of claim 18 wherein the electrical system comprises an electrical system of a vehicle.

27. The method of claim 18 wherein the third parameter comprises electrical resistance and is determined in accordance with the equation:

$$R_1 = F[P(C, D'), P(C', D')]$$

Where C, C' and D' are points on the electrical system.

28. The method of claim 27 including applying a forcing function between the C point on the electrical system and a D point on the electrical system.

29. The method of claim 18 wherein the first and second parameters are indicative of a cold cranking amps (CCA) measurement.

30. The method of claim 18 including providing an output related to the third electrical parameter.

31. The method of claim 30 wherein the output is provided to an operator.

32. The method of claim 30 wherein the output is provided to electrical circuitry.

33. The method of claim 30 wherein the output comprises a pass/fail output.

34. The method of claim 30 wherein the output is indicative of a voltage drop for a particular current through the electrical system.

35. An apparatus for measuring electrical parameters of an electrical system comprising:

measurement means for:

measuring a first parameter of the electrical system between a first connection to the electrical system and a second connection to the electrical system;

measuring a second parameter of the electrical system between a third connection to the electrical system and the second connection to the electrical system; and

processor means for determining a third electrical parameter of the electrical system as a function of the first parameter and the second parameter.